Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**Notes Questions for the Unit 10 Part 1 Notes: The Basics of Mendelian Genetics**

AP Biology, Mrs. Krouse and Ms. Glick

**Instructions:** For #1-13, complete the following steps.

* Label the type of problem in the space provided next to the number (basic monohybrid, dihybrid, incomplete dominance, codominance, or sex-linkage)
* Use the Punnett square provided to show the cross (if applicable)
* Provide the numerical answer to the question in the space provided

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In humans the allele for albinism is recessive to the allele for normal skin pigmentation. If two heterozygotes have children, what is the chance that a child will be albino? Give your answer as a decimal value



Answer:\_\_\_\_\_\_\_\_\_\_

2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** For the problem given above, if the child is normal, what is the chance that it is a carrier for the trait? Give your answer as a fraction.

Answer: \_\_\_\_\_\_\_\_\_\_

3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In purple people eaters, one-horn is dominant and no horns is recessive. Show the cross of a purple people eater that is heterozygous for horns with a purple people eater that does not have horns. What is the chance that a child will be hornless? Give your answer as a %.



Answer:\_\_\_\_\_\_\_\_\_\_

4. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In humans, the brown-eye (B) allele is dominant to the blue-eye allele (b). If two heterozygotes mate, what is the chance that a child will have blue eyes? Give your answer as a decimal.



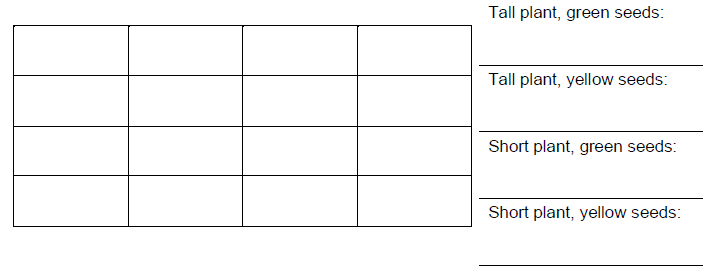
Answer:\_\_\_\_\_\_\_\_\_\_

5. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In seals, the gene for the length of the whiskers has two alleles. The dominant allele (W) codes long whiskers & the recessive allele (*w*) codes for short whiskers. What percentage of offspring would be expected to have short whiskers from the cross of two long-whiskered seals, one that is homozygous dominant and one that is heterozygous?



Answer:\_\_\_\_\_\_\_\_\_\_

6. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In pea plants, the green color allele (G) is dominant over the yellow color allele (g) for seed color and the tall allele (T) is dominant over the short allele (t) for plant height. A parent who is homozygous dominant for color and short is crossed with a plant who is heterozygous for both traits. Determine the frequency for the four different phenotypes of the offspring in fractions.



7. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In peas the trait for tall plants is dominant (*T*) and the trait for short plants is recessive (*t*). The trait for yellow seed color is dominant (*Y*) and the trait for green seed color is recessive (*y*). A cross between two plants results in 296 tall yellow seed plants and 104 tall green seed plants. What is a possible set of genotypes for the parents? (ex: ttYY x TTYY)

Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In radishes, pure-breeding red radishes crossed with pure-breeding white radishes make purple radishes. If you cross a purple radish with a white radish, what is the chance that the offspring will be white? Give your answer as a %.



Answer:\_\_\_\_\_\_\_\_\_\_

9. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** In cattle, the heterozygotes (individuals with one copy of the red allele and one copy of the white allele) have a mixture of red and white hair. Cattle with this color pattern are called “roan cattle.” If two roan cattle are mated, what is the chance that the offspring will be roan? Give your answer as a decimal.



Answer:\_\_\_\_\_\_\_\_\_\_

10. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** The genes for hemophilia are located on the X chromosome. It is a recessive disorder. If a normal man marries a woman who is a carrier for hemophilia, what % of their children will have hemophilia, and what sex will they be?



Answer:\_\_\_\_\_\_\_\_\_\_

12.**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** For the problem given above, what fraction of their daughters will be carriers for hemophilia?

Answer:\_\_\_\_\_\_\_\_\_\_

13. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** If a man and a woman who do not have hemophilia have a son with hemophilia, what must be true about the mother?

Answer:

14. **Probability Practice Problem:** Eye color is controlled by two alleles, a dominant brown eye allele (B) and a recessive blue eye allele (b). A couple with brown eyes has a child with blue eyes. What is the probability that BOTH of their next two children will have blue eyes? Give your answer as a fraction.



Answer: \_\_\_\_\_\_\_\_\_\_\_\_